

REMARKS

Claims 1-10 are pending in this Application. Claims 1, 2, 5, 7, 8, and 10 have been amended with this response. Claim 9 has been cancelled. The Abstract has been amended. Applicant respectfully submits that the claims as presented are in condition for allowance.

No new matter has been introduced by these amendments. Reconsideration and allowance of the claims are respectfully requested in view of the above amendments and the following remarks.

Claim Objections

The Examiner has objected to the claims for various informalities. Applicant has respectfully amended the claims to overcome these objections.

Claim Rejections Under 35 U.S.C. §102

Claims 1-2, 4, and 7-10 are rejected as being anticipated under 35 U.S.C. 102(b) by Hildebrandt, U.S. Patent No. 4,088,028 (hereinafter “Hildebrandt”), Fowler, U.S. Patent No. 4,182,155 (hereinafter “Fowler”), or Furumura, Japanese Patent No. 5-288,728 (hereinafter “Furumura”). Applicant respectfully traverses.

“A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.” *Verdegaal Bros. V. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987).

Applicant’s amended claim 10 recites, *inter alia*,

“the ultrasonic pulse producing a creeping wave in the base material, the creeping wave being a surface wave, at least a portion of the creeping wave reaching the receiving transducer via the precursor body.”

Applicant first asserts, respectfully, that Hildebrandt does not teach an ultrasonic pulse producing a creeping wave in the base material, wherein the creeping wave is a surface wave.

Instead of teaching a creeping wave that is a surface wave, referring to Figure 1, Hildebrandt teaches a travel path 10 for an ultrasonic signal, while Figures 2-5 do not teach any waves at all. The travel path 10 in the volume of workpiece 3 shown in Figure 1 is not a volume wave, but even if, *pro arguendo*, a volume wave were to be shown, a volume wave propagates in three-dimensional continuum and is thus not a creeping wave that propagates in more or less two dimensions. The complete Detailed Description Hildebrandt, (i.e. col. 3, line 47 to col. 7, line 35) does not refer to a creeping wave at all. This description refers to a reflection of the ultrasonic search pulses at the rear surface 11, clearly teaching a known pulse echo method. This pulse of Hildebrandt is taught to travel through the volume of workpiece 3, and Hildebrandt does not teach or suggest any production of a creeping wave caused by this pulse. Furthermore, Hildebrandt is silent to any different type of propagation except pulses or creeping waves.

Thus, for at least these reasons discussed above, Applicant respectfully submits that Hildebrandt fails to disclose all of the limitations of amended Claim 1. Accordingly, Applicants further submit that Hildebrandt does not anticipate amended Claim 1 or Claims 2, 4, and 7 that depend from Claim 1.

Next, Applicant asserts, respectfully, that Fowler does not teach an ultrasonic pulse producing a creeping wave in the base material, wherein the creeping wave is a surface wave. Instead, referring to Figures 1 and 2, Fowler depicts volume propagation of pulses reflected at a back surface; see especially col. 3, lines 57-59, while in Figure 3 teaches a reflection at an entrance surface. Fowler does not teach any production of a creeping wave or any other wave due to the sound pulses. In fact, Fowler teaches the sound pulses to stay sound pulses from the transmitting transducer element 22 to the receiving transducer element 26.

Thus, for at least these reasons discussed above, Applicant respectfully submits that Fowler fails to disclose all of the limitations of amended Claim 1. Accordingly, Applicants further submit that Fowler does not anticipate amended Claim 1 or Claims 2, 4, and 7 that depend from Claim 1.

Next, Applicant asserts, respectfully, that Furumura does not teach an ultrasonic pulse producing a creeping wave in the base material, wherein the creeping wave is a surface wave. Instead, referring to the Figures of Furumura there is taught two receivers, a first receiver 5b and a second receiver 5c. Time differential in the signals received by these receivers is taught for calculating the speed of sound. Furumura does not use the feature of the shortest travel time T_{tot} and does not need this feature at all because the two receivers 5b, 5c are employed. Furumura is silent to the shortest travel time between the transmitting transducer and any of the receivers because Furumura does not teach a measurement of any time T between the transmitter and any one of the receivers, but only between the two receivers.

Thus, for at least these reasons discussed above, Applicant respectfully submits that Furumura fails to disclose all of the limitations of amended Claim 1. Accordingly, Applicants further submit that Furumura does not anticipate amended Claim 1 or Claims 2, 4, and 7 that depend from Claim 1.

Referring now to Applicant's amended claim 8, there is recited

“wherein the ultrasonic pulse produces a creeping wave in the base material, the creeping wave being a surface wave, a portion of the creeping wave being configured to reach the receiving transducer via the precursor body, and wherein the shortest sound travel time T_{tot} of the ultrasonic pulse is measurable and the sound velocity C_b in the base material is determinable by the very path between the transmitting transducer and the receiving transducer that supplies the shortest total travel time T_{tot} .”

As is discussed with reference to claim 1, none of Hildebrandt, Fowler, and Furumura teach a creeping wave in the base material, wherein the creeping wave is a surface wave or a measurement of T_{tot} . Thus, for at least these reasons discussed above, Applicant respectfully submits that none of Hildebrandt, Fowler, or Furumura fails to disclose all of the limitations of amended Claim 8. Accordingly, Applicants further submit that none of Hildebrandt, Fowler, or Furumura anticipate amended Claim 8 or Claim 10 that depends from Claim 8. Reconsideration, entry of the amendment and allowance of Claims 1-2, 4, and 7-10 are thus respectfully requested.

Claim Rejections Under 35 U.S.C. §103

Claims 3 and 5-6 are rejected under 35 U.S.C. 103(a) as being obvious over any of Hildebrandt, Fowler, and Furumura in view of Taran, U.S. Patent No. 6,070,466 (hereinafter “Taran”) or Carodiskey, U.S. Patent No. 6,035,717 (hereinafter “Carodiskey”).

To establish a *prima facie* case of obviousness, it is known that three basic criteria must be met: (1) there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings; (2) there must be a reasonable expectation of success; and (3) the prior art reference(s) must teach or suggest all the claim limitations. *In re Fine*, 5 U.S.P.Q.2d 1596, 1598 (Fed. Cir. 1988); *In Re Wilson*, 165 U.S.P.Q. 494, 496 (C.C.P.A. 1970); *Amgen v. Chugai Pharmaceuticals Co.*, 927 U.S.P.Q.2d 1016, 1023 (Fed. Cir. 1996).

Dependent claims inherit all of the limitations of the parent claim. Claims 3 and 5-6 depend from Claim 1. As discussed above, none of Hildebrandt, Fowler, and Furumura disclose all of the elements recited in amended Claim 1. Neither Taran nor Carodiskey, taken alone or together, remedy the deficiencies of Hildebrandt, Fowler, and Furumura. Therefore, any proposed combination of Hildebrandt, Fowler, Furumura Taran, and Carodiskey *does not teach or suggest all of the limitations* of at least Claims 3 and 5-6. Thus, *prima facie* obviousness does not exist regarding Claims 3 and 5-6 with respect to any proposed combination of Hildebrandt, Fowler, Furumura Taran, and Carodiskey.

Additionally, since any proposed combination of Hildebrandt, Fowler, Furumura Taran, and Carodiskey fails to teach or suggest all of the limitations of Claims 3 and 5-6, clearly, one of ordinary skill at the time of Applicant’s invention would not have a *motivation to modify or combine the references*, nor a reasonable likelihood of success in forming the claimed invention by modifying or combining the references. Thus, here again, *prima facie* obviousness does not exist.

Accordingly, Applicants respectfully submit that for at least the reasons set forth hereinabove, Claims 3 and 5-6 are not obvious over the proposed combination of Hildebrandt, Fowler, Furumura Taran, and Carodiskey. Reconsideration and allowance of Claims 3 and 5-6 are respectfully requested.

Conclusion

All of the objections and rejections are herein overcome. In view of the foregoing, it is respectfully submitted that the instant application is in condition for allowance. No new matter is added by way of the present Amendments and Remarks, as support is found throughout the original filed specification, claims and drawings. Prompt issuance of Notice of Allowance is respectfully requested.

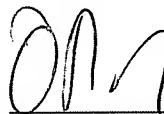
The Examiner is invited to contact Applicants' attorney at the below listed phone number regarding this response or otherwise concerning the present application.

Applicants hereby petition for any necessary extension of time required under 37 C.F.R. 1.136(a) or 1.136(b) which may be required for entry and consideration of the present Reply.

If there are any charges due with respect to this Amendment or otherwise, please charge them to Deposit Account No. 06-1130 maintained by Applicants' attorneys.

Respectfully submitted,

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